

Preliminary Study on Management of Fire Safety System on High-Rise Building Construction Site

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Keywords: High-rise building; Construction site; Fire safety system

Abstract: With the continuous improvement of people's living standards, there are more and more high-rise buildings. As a result, more and more security problems have emerged. In recent years, there are many fires in high-rise buildings every year. Therefore, it is necessary to fundamentally analyze and study the management of fire safety system on high-rise building construction site, analyze the fire ignition line and a management system of fire safety system on high-rise building construction site, and put forward the countermeasures of fire safety system management on high-rise building construction site. Based on the present situation of fire safety system on high-rise buildings in China, this paper analyses the problems in the management of fire safety system, and explores the countermeasures to improve the fire safety system.

The development of the market economy has increased the demand for high-rise buildings in cities, and it is also a manifestation of economic development. With the increase in the demand for high-rise buildings, it has also increased a lot of safety hazards, especially in the management of fire safety systems on the construction site. Fire safety system is not only the basic safety of the construction site, but also the protection of the construction personnel. Strengthening fire safety system can improve the quality of construction site and ensure the safety of construction personnel. It is also a problem to be solved in high-rise buildings. However, the integrity of site safety system management in high-rise buildings in China is not particularly good, and personnel safety awareness is not enough, and it has not received any attention^[1]. Therefore, the fire safety system on high-rise buildings is extremely necessary. Systematic management should be carried out from the aspects of construction personnel, construction site and technical support to reduce the hidden fire hazards in high-rise buildings and reduce the property losses directly.

1. Problems in the Management of Fire Safety System on High-Rise Building Construction Site

1.1 The System of Fire Safety Management on the Construction Site is Imperfect.

Construction site is usually simple and dangerous, so a clear fire control management system is a guarantee of life for construction personnel. At present, many enterprises on the construction site in our country will also have the formulated fire safety management system, but there are still many problems. From the perspective of the construction personnel, most of them are laborious workers, lack of awareness of fire knowledge, and pay insufficient attention to fire safety. From the perspective of the system, the content of the system is not changed according to the changes of the times, the contents are outdated and do not meet the actual requirements of the construction site, resulting in the fire safety system management system does not play a fundamental role, reducing the feasibility of the fire safety system. The management system of fire safety on construction site is unified and generalized, lacking clear and detailed relevant regulations, failing to reach the unified management mechanism, leading to basic errors and failing to meet the requirements of fire safety system on high-rise building construction site.

1.2 The Construction Site of High-Rise Building is Simple and the Fire Fighting Tools are Incomplete.

The construction site of a high-rise building is relatively simple. If a fire occurs during the construction process, fire-fighting tools are needed to extinguish the fire. However, in the general construction environment, there is a lack of adequate fire-fighting tools, and the fire spreads very quickly. If the casualties of personnel are caused by the lack of fire-fighting tools, it is a very painful price. At present, workers on many construction site have a weak sense of self-protection, and the tools of the facilities are incomplete. If a fire occurs on the construction site of a high-rise building, there will be insufficient fire-fighting facilities or various fire extinguishers to extinguish the fire, which will seriously threaten the safety of life. Moreover, when high-rise buildings fire extinguishing, the fire water is insufficient, and the water pressure and water can not keep pace with the spread of the fire, improving the difficulty of fire extinguishing. Last but not least, there is a lot of material on the construction site, the structure is very complicated, and there are many fire ignition points, which is one of the main causes of fire.

2. Management Countermeasure of Fire Safety System on High-Rise Building Construction Site

2.1 To Establish a Sound Management System and to Clarify Responsibilities.

To strengthen the management of fire safety system, first of all, we should establish a sound management system and system, stipulate the safety management regulations of high-rise building construction site clearly, clarify the responsibility, and implement the responsibility of fire safety. Before the construction of high-rise buildings, the primary task is to sign fire safety related contracts. For construction units and construction management units, they should list reasonable and detailed safety management regulations, issue safety rules, amend and sign safety contracts, and establish a sound fire safety inspection system for high-rise building construction sites and emergency measures for fires on the construction site. The safety regulations should be made clear to individuals, and should be strictly implemented on the construction site in accordance with the established safety system, and the management of fire safety system should be strictly carried out ^[2]. However, the regulations formulated should be changed according to the construction environment and construction conditions of high-rise buildings. In addition to the management of fire safety system in line with the construction site environment, the construction general undertaking units should supervise the execution of the fire safety management system by each sub-unit, supervise whether the system is really implemented. In addition, the management of each management unit and construction site should be strengthened to form a unified, rational and orderly management system.

2.2 To Configure Relevant Fire Tools and to Ensure the Safety of Construction Workers.

The important factor of fire safety system management on high-rise building construction site is to have a certain amount of fire equipment and tools, which is a strong guarantee of fire safety. Firstly, the fire fighting equipment should be configured. In addition, fire fighting equipment, such as portable fire extinguishers, fire buckets and sandbags, should be equipped in offices, dormitories and warehouses. And fire equipment should be placed in a particularly conspicuous place. No sundries should be placed around it. Fire warning signs of "Fire equipment, no moving" should be made well ^[3]. Daily maintenance and regular inspection should be carried out to ensure the availability and integrity of fire fighting equipment placed on the construction site of high-rise buildings. Secondly, fire water sources should be equipped. Fire water source is also important for fire safety system, and the water used in construction site can be used for fire water at the same time. If the temporary water does not meet the requirements of fire water, the corresponding fire pool should be set up near the construction site so that the water can be collected timely in case of fire. Furthermore, it is necessary for large-scale high-rise building site to install some basic fire fighting equipment before construction, and to store a certain amount of water in the floor. In winter, when

the temperature is low, it is necessary to do a good job in freezing protection of fire fighting water source. Finally, fire alarm equipment should be configured. High-rise building construction site is chaotic with a lot of debris. If it is not handled properly, it is prone to be fired, so automatic fire alarm system and temporary video surveillance system can be set up on the construction site. When the fire occurs, it can be found and put out at the first time. And it should ensure that the automatic fire alarm system can work normally in any period of time. It is an effective way to strengthen the management of fire safety system on high-rise building construction site by making good use of fire fighting equipment and fire fighting configuration, which prevents the situation of lack of tools for fire fighting and protects the safety of construction personnel.

2.3 To Strengthen Fire Safety Education and to Conduct Safe Evacuation Exercises.

To strengthen the fire safety education of construction personnel is to prevent fire from happening artificially, which is the key of fire safety system management on high-rise building construction site. Fire safety education for construction personnel should start from the following aspects:

Constructors should be organized to study the *Fire Protection Law of the People's Republic of China* and Organizations, Enterprises and Institutions Fire Safety Regulations. And constructors should study and implement the knowledge earnestly to further enhance the fire safety awareness of construction personnel.

To train construction personnel how to alarm correctly and quickly when a fire occurs, because the location and the form of the fire should be provided to the police when alarming. If the construction personnel do not know the location of the construction site, it will not be able to alarm for the first time, resulting in more and more serious and uncontrolled fire ^[4]. Enhancing the knowledge of fire alarm of constructors is not only necessary for the construction of high-rise buildings, but also an important man-made measure to ensure safety.

Safe evacuation drills should be conducted to strengthen the ability of construction personnel to deal with fire. When conducting safety evacuation drills, evacuation routes, safe evacuation points and safe evacuation channels should be formulated according to the layout of high-rise building construction site, and safety evacuation sketches should be formed. Most of the fires are sudden, which will cause the panic of the staff. Therefore, it is necessary to strengthen the training of the staff for basic fire safety, so that the staff can use fire knowledge to carry out simple self-rescue.

3. Conclusion

With the development of the economy, high-rise buildings are also constantly developing, and the management of fire safety systems on the construction site needs to be more and more perfect. Therefore, this paper analyzes the development status of fire safety system management on the construction site of high-rise buildings in China. The results show that the fire protection system on the construction site is not perfect, and it is not clear to personalization, so it lacks a mandatory system to restrain and the fire protection awareness of personnel is not strong enough. Another reason is the lack of fire-fighting tools, which can not guarantee the safety of construction workers. In addition, the targeted countermeasures are explored in this paper according to the fire protection problems existing on the construction site of high-rise buildings to ensure the safety of construction workers.

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